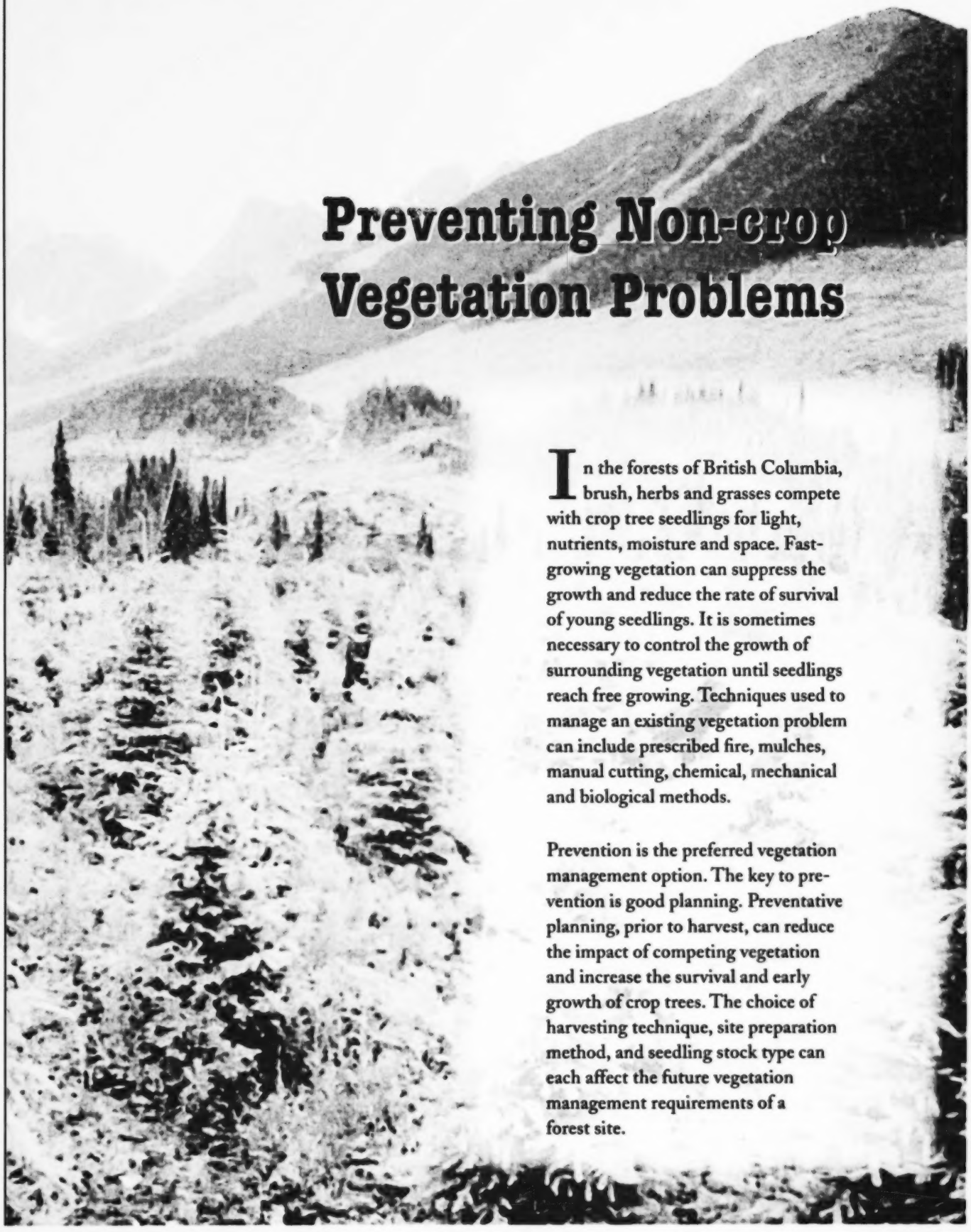
Preventing Non-crop Vegetation Problems



In the forests of British Columbia, brush, herbs and grasses compete with crop tree seedlings for light, nutrients, moisture and space. Fast-growing vegetation can suppress the growth and reduce the rate of survival of young seedlings. It is sometimes necessary to control the growth of surrounding vegetation until seedlings reach free growing. Techniques used to manage an existing vegetation problem can include prescribed fire, mulches, manual cutting, chemical, mechanical and biological methods.

Prevention is the preferred vegetation management option. The key to prevention is good planning. Preventative planning, prior to harvest, can reduce the impact of competing vegetation and increase the survival and early growth of crop trees. The choice of harvesting technique, site preparation method, and seedling stock type can each affect the future vegetation management requirements of a forest site.

106-06585/

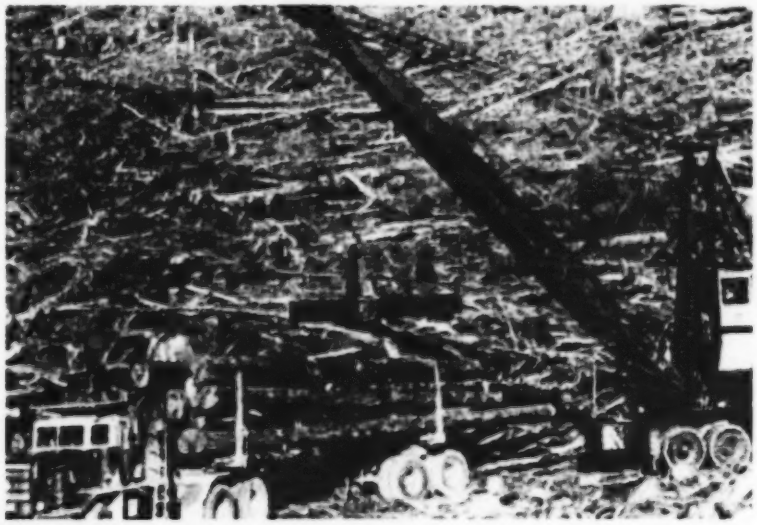
Pre-harvest Stage Assessment

Prior to any logging operation, the proposed harvest site should be assessed to identify any potential vegetation management problems.

Non-crop vegetation found in the proposed harvest area (especially in open areas) and in adjacent areas provides an indication of the types of vegetation that may flourish following harvest. Vegetation competition may also be predicted at the pre-harvest stage from site characteristics, such as moisture or nutrient levels, that favour the growth of certain competing species. Knowledge of local conditions and the competitive abilities of existing vegetation can also help predict if seedling growth will be compromised by other types of vegetation. Planning for the control of non-crop vegetation should take place at this stage.

Harvest

The season of harvest and the types of harvesting equipment and techniques used all affect the level of soil disturbance found on the site. For example, on some coastal sites, alder will invade a harvested site if the soil mineral layer is exposed during harvest. Keeping soil disturbance to minimal levels during harvesting can decrease the incidence of invasion of many competing non-crop plant species.



Site Preparation

Site preparation is used to improve a harvested site for planting or natural regeneration by creating favourable growing areas. The techniques used to prepare the site also influence the types and amount of vegetation that may develop on a site following harvesting. Well-planned and appropriate site preparation can make site conditions optimal for seedling establishment and growth. It can also reduce plant competition often allowing tree seedlings to achieve free growing without additional vegetation control. For example, seedlings planted on large mounds often get the jump on surrounding competing vegetation. Burning can also effectively reduce shrub cover and, where the organic layer is maintained, reduce ingress from species (such as alder or birch) that require a mineral seedbed.

Site Regeneration

Increasing the tree seedlings' relative competitive ability can be an effective strategy for preventing vegetation management problems. The need for follow-up treatments can be substantially reduced if healthy, vigorous seedlings of the appropriate stock type and species are planted promptly after harvesting, before competitors are established.

Planting Stock

Planting stock size, type and condition will influence how seedlings respond to competing vegetation. Selecting planting stock on a site-specific basis will contribute to successful crop-tree establishment.

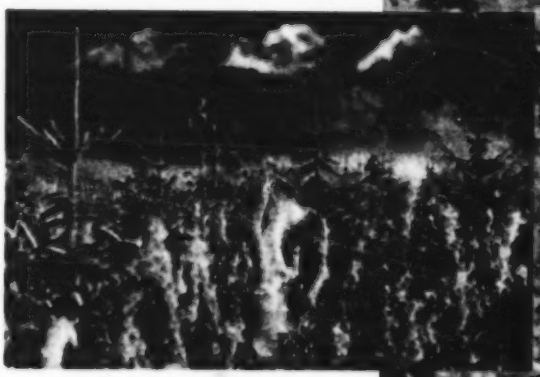
Stock types with excellent physiological qualities will have greater competitive ability. Stock that has special characteristics such as frost hardiness and disease resistance may have improved rates of survival. Planting large seedlings that will outgrow competing vegetation will also improve seedling survival and growth. Large seedlings also compete more efficiently for light and will respond better than smaller seedlings to the removal of competing vegetation.

Prompt planting following site preparation before other vegetation has an opportunity to become established, can help significantly in reducing the effect of competition. Seedlings can also take advantage of the initial flush of nutrients that may be available as a result of some site preparation activities.

Fertilization

Fertilization with the required nutrients can enhance the growth of crop trees and allow them to outcompete undesirable vegetation. On some sites, fertilization at the time of planting helps to ensure seedling establishment. However, crop-tree seedlings may not benefit from fertilization where competing vegetation is a problem, unless the fertilization is combined with brush control.

Physical Barriers



Physical barriers, such as flexible plastic netting or rigid plastic tubing, can protect crop trees from animal browsing and small mammal damage. As a result, seedling establishment and growth can be enhanced making the seedlings more able competitors.

Cover Crops

Mixes of grasses and legumes can be seeded on forest sites as a cover crop immediately following site preparation. On appropriate sites, cover crops help to prevent the invasion of competing brush species or other undesirable vegetation such as noxious weeds.

To ensure that cover crop application will be successful, the potential interaction among the proposed cover crop species, the crop species and the competing vegetation must be determined. For example, on sites where moisture is a growth limiting factor, cover crop grasses may outcompete undesirable vegetation. However, they may also inhibit the growth of crop trees.

Follow-up Measures

Although preventative measures are taken prior to harvest, some sites will still have vegetation management problems. Periodic site inspections following harvest, site preparation and regeneration help to detect existing or potential problems. The type of competing vegetation, its abundance, severity, growth rate and competitive abilities should all be determined to help design a prompt and appropriate vegetation control strategy for the site. The use of appropriate techniques can improve survival and growth of seedlings, and reduce costly repeat treatments.

Evaluation

Evaluating the success or failure of different silviculture treatment activities will help prevent future vegetation management problems. Successful techniques can be repeated on other sites and mistakes can be avoided. Research continues to be undertaken to identify the best prevention measures for competing vegetation in British Columbia's forests.

For more information contact:

Vegetation Management Specialist
BC Ministry of Forests
Forest Practices Branch
Stn. Prov. Govt.
P.O. Box 9513
Victoria, BC V8W 9C2
Phone: (250) 387-8905
Fax: (250) 387-2136

FOREST RENEWAL BC

BRITISH COLUMBIA